**DATABASE MANAGEMENT SYSTEM**

**Using a Relational Database:**

Using your knowledge of creating a database solution create the following solution, adhering to:

* Field definitions and types
* Validation
* Formats & conventions in reports, etc.

FileMaker Pro uses related tables as the basis for relational databases and lookups.

Relational databases allow you to work with data from other tables dynamically, so that you can change data in one place and your changes are reflected in all places where the related data appears. Lookups let you copy and paste data from one table to another; once looked-up data has been inserted, it does not change unless you edit it or tell FileMaker Pro to look it up again.

**Use relational databases to:**

1. See and work with data from another (or the current) table in its most up-to-date state. For example, display data in related fields when you need current data from a related table, such as the current price of an item. As data changes in the related records, you see those changes in the current table.
2. Set up and manage data efficiently and with flexibility. Instead of creating many database tables or files with duplicate values, you store single occurrences of values and use relationships to make those values available. You can then make changes to data in only one place, which eliminates data duplication and promotes data accuracy. Using tables reduces data redundancy.
3. Save disk space, because data is stored in only one place.

**Relational Database Terminology:**

|  |  |
| --- | --- |
| **Term** | **Description** |
| Current table | For relational databases, the table that you are currently working in.  For lookups, the table that the data is copied to. | |
| Match field | A field in the current table and a field in a related table that each contains values used to access matching records. (A match field is sometimes called a key field.) For each relationship, you select one or more match fields in each table.  For relational databases, values in match fields must match each other in some way for a relationship to be established between the files.  For lookups, values in match fields do not have to be equal to match. |
| Portal | A layout object that displays records from related tables. Portals display data from related fields in rows, one record in each row. |
| Related field | A field in one table that is related to a field in another table (or to a different field within the same table). If a relationship has been created between two tables (even through another table), data in fields in one table can be accessed from the other table. |

***About match fields for relationships***

When you create a relationship between tables, you choose one or more fields in each table as match fields. Match fields usually have common values. In a typical relationship, a record in one table will be related to records in another table that share a common match field value.

For example, a Customers table and an Invoices table can each use the field Client ID to uniquely identify each customer and purchase. If the two tables are related using Client ID as the match field, a record in the Customers table can display a portal showing each invoice with a matching Client ID, and in the Invoices table, each invoice with the same Client ID can display consistent customer data.

The match fields used in a relationship can have different names. Match fields can be any field type except container or summary.

**Single-criteria relationships**

In a single-criteria relationship, data in one field is matched to data in another field.

For example, a record in either table is related to any record in the other table when the values in the Client ID field in the Clients table and the Client ID field in the Phone Numbers table are the same.



A contacts database consists of two tables, Contacts which stores names and addresses and Phone numbers which stores phone numbers and phone types, eg. work, home, fax, mobile.

**Why is the data split between the two tables?**

This is because a single contact can have multiple phone numbers.

Below are the Two tables and their fields

**Contacts Table Phone Numbers Table**

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Field Type** | **Field Name** | **Field Type** |
| Client ID | No; auto-enter serial no, match field for contacts table | Client ID | Number field; match field for phone no table |
| FName | Text | Phone Type | Text, value list: home, work, fax, mobile |
| surname | Text |  |  |
| Address1 | text | Phone Number | Text |
| Town | Text |  |  |
| State | Text, Value list |  |  |
| Post Code | Text, Range |  |  |

1. Create a new database, contactsXX where XX represents your initials.
2. Define the fields for contacts as above.

**Contacts Table**

3 Enter the details of your class members in the **contacts table**

**4 Phone Numbers Table**:

Create a Phone Numbers table and define the following fields:

Contact ID, number

Phone No, text

Phone Type, Value List, Home, Work, Fax, Client ID

1. **Define the relationship between the two tables as below:**

Define Database, Relationships; (click and drag the client ID fields and establish the relationship.





In the **Edit Relationship box**, the option to **Allow** creation of records in this table via this relationship is enabled. The option to **Delete** related records in this table when a record is deleted in the other table is also enabled, because there is no reason to retain old phone numbers once the matching contact record has been deleted.

Because the relationship is defined to allow the creation of related records in the Phone Numbers table,

the **contact ID number** from a **Clients record** will be automatically inserted in the **Contact ID** field in the **Phone Numbers** table in each new related record.

This allows **many records** in the Phone Numbers table to be related to a **single record** in the Clients table.

6 Add a **portal** to the phone numbers table to the Contacts layout. Use the portal tool and insert two fields, Phone No and Type as below:



7 Then choose to add the two fields to the contacts table.



8 Use the text tool to label the two fields, Phone No and Phone Type.

**Click OK**

9 Enter the phone numbers for each person in the **Contacts Layout**

11 Enter mobile and other numbers.

12 change between the contacts and phone number tables to view the records being created.

13 Add a new contact in the contacts table and some phone numbers.

14 Delete a record in the phone number table; what happens to the contact?

15 Upload your finished solution to the wiki.